

A REVIEW OF THE AUSTRALIAN REPRESENTATIVES OF THE  
GENUS CRYPTOPLAX, ORDER POLYPLACOPHORA.

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PLATES XVI. TO XIX.

Family CRYPTOPLACIDAE, Dall.

Genus CRYPTOPLAX, Blainville, 1818.

A group of vermiform chitons with greatly reduced valves, often widely separated, and with usually a great width of girdle, which is densely covered with spicules; having three slits in the insertion plate of the anterior valve, but no slits in any of the others.

*Introduction.*—The brief resumé of the Australian members of this genus given on p. 578 in the writer's paper on the Types, in the Paris Museum, needs revision, both on account of my notes on the examination of the types in the British Museum not having been referred to in the preparation of that paper, and also because of the recent discovery of Thiele's *Cryptoplax michaelsoni*, at Carnarvon, in Western Australia. This latter was, for reasons stated below, somewhat imperfectly described, and has hitherto only been known from the unique specimen in the Berlin Museum. One is now able to deal with the group in a much more thorough manner. Descriptions are appended of the two forms described by Dr. Thiele, as up till now no description of these has been published in English.

CRYPTOPLAX STRIATUS, Lamarck, 1819.

Pl. xix., fig. 5.

(*Chitonellus striatus*, Lamarck, An. S. Vert., vi., p. 317, 1819; Ashby, Trans. Roy. Soc. S. Austr., vol. xlvii., p. 577.)

The discovery of Lamarck's type of *C. striatus* in the Paris Museum, referred to in my paper (*l.c.*), settled the long outstanding question as to which of our known shells was *C. striatus*. The type came from Kangaroo Island, and the shell is the common one in the State of South Australia, but is distinct from the shell that has been known under the name of *C. striatus* from Sydney. It is easily distinguished from the more northern species in that, in the adult shells, the sculpture of *C. striatus* is always longitudinal, coarse, wavy ridges, and that, in the adult, the valves, after the first four, are usually more or less spaced; the girdle is densely spiculate, the spicules being long and much curved. Juvenile shells of this species are decorated with longitudinal rows of granules, which are less bead-like than is the case with the Sydney shells; this feature can be observed near the umbo in the adult. I have collected this species as far west as Venus Bay, and have specimens from Philip Island, and one adult given me by Mr. Tom Iredale, from Port Fairy, near the New South Wales border, in Victoria.

CRYPTOPLAX STRIATUS, Lam., var. GUNNI, Reeve, 1847.

(*Chitonellus gunni*, Reeve, Conch. Icon., f. 5, 1847; non *gunni*, Rv. of Ashby, (*l.c.*), auct.)

I saw in the British Museum last year Reeve's type of this shell and noted that it was conspecific with *C. striatus*, Lam., from Tasmania and South

Australia. I believe the type was from the former State, and therefore suggest that the form noted from King Island (Ashby and Hull, Austr. Zool., vol. iii., pt. 2, March, 1923) as having shorter spicules, more widely spaced and proportionally stouter, than typical *C. striatus* from South Australia, be recognized as Reeve's var. *gunni*. In the same paper we noted that the granulose character of the juvenile shells from King Island was changed into ridges at a rather earlier stage than is common in typical specimens of *C. striatus*. I consider this variety is common to both King Island and Tasmania.

***Cryptoplax striatus*, Lam., var. *westernensis*, n. var.**

In October, 1920, the writer collected at Rottneest, Western Australia, a single specimen of *Cryptoplax* that differs slightly from *C. striatus*. The specimen measures 35×15 mm.; valves 5, 6, 7 are slightly spaced, all are strongly beaked. I referred this specimen to *C. striatus* (Trans. Roy. Soc. S. Austr., vol. xlv., 1921, p. 45). It differs from the typical shell in that it shows no sign of the granulose sculpture of the juvenile form, and seems, from the start, to commence the coarse, longitudinal ridges, also the spicules on the girdle are both shorter and more slender than in *C. striatus* proper. It seems in some respects to be intermediate between *C. striatus* and the form with very short, hair-like spicules, which we have for so long incorrectly called *C. gunni* of Reeve, but the character of the spicules is nearer *C. striatus*. This was probably the shell from Western Australia referred to by Thiele as *C. gunni* and by Torr as *C. striatus*.

I therefore suggest that this western form be distinguished as a variety of *C. striatus* under the name of *C. westernensis*, Ashby.

***Cryptoplax iredalei*, n. sp.**

Pl. xix., fig. 4.

Reference has been made to a *Cryptoplax* that has been referred to as *C. gunni*, Reeve, by most writers. My examination of the type, in company with Mr. Iredale, effectually disposes of that determination and leaves this *Cryptoplax* without a name. Mr. Iredale has for some years been aware that this shell was not *C. gunni*, but until the rediscovery of Lamarck's types (before referred to) it was still an open question as to which of our known species were conspecific with Lamarck's shells. I promised to leave this species to Mr. Iredale for naming, and therefore will content myself with a short definition, sufficient for the purposes of this paper. (Note.—As more than a year has elapsed and this species seems still without a name, I propose to call it after Mr. Iredale. I had hoped prior to the reading of this paper to have received his approval of this action.)

The valves in this species may be slightly narrower and longer than *C. striatus* of the same size—the juvenile is similarly granulose in sculpture—but in what may be termed semi-adult specimens there is usually a space between the 5th and 6th valves, and in very large specimens—one before me measuring 95 mm. in length (dried)—there is a short space after the 3rd valve and a wide space after valves 4, 5, and 6.

The distinguishing character is found in the girdle, which is usually banded in very pretty shades of rich brown and grey. The spicules are very dense, but so minute and slender as to be overlooked altogether without the aid of a good pocket lens.

*Habitat*.—I have taken it at Port Lincoln and in many places on the Gulf of St. Vincent, and Mr. W. L. May has taken it in north-western Tasmania.

## CRYPTOPLAX LAEVIS, Lamarck, 1819.

(*Chitonellus laevis*, Lam. An. Sans. Vert., vol. 7, Mollusca, Blainville, pl. 87, f. 5=  
*Chitonellus lamarcki*, Rochebrune, Ashby, *l.c.*)

The type was collected by Peron and Lesueur and measures 49×12 mm. In my paper, telling of its rediscovery, occurs the following note: "Nearly the whole of the surface of the shell is eroded, and the girdle is denuded of spicules except that portion commencing opposite valve 7, where the spicules are fortunately still in evidence. The spicules are very peculiar, being very widely spaced, short, blunt, and rounded, quite distinct from any species I have seen."

I suggested in the same paper that it might be conspecific with Thiele's *C. hartmeyeri*, but now, as the result of the present examination of almost, if not all, of the known members of this genus inhabiting Australia and elsewhere, I do not think it likely that the spicules in *C. hartmeyeri* can ever take the peculiar form of *C. laevis*, Lam., and therefore its identification must await further elucidation.

## CRYPTOPLAX ROSTRATUS, Reeve, 1847.

Pl. xix., figs. 2, a, b, c.

(*Chitonellus rostratus*, Reeve, Conch. Icon., vol. iv., pl. i., fig. 6, May, 1847; *C. torresianus*, Rochebrune, Bull. Soc. Philom., Paris, p. 195, 1881; *C. torresianus*, Rochebrune, Ashby, *l.c.*, non *Chitonellus striatus*, Lam., auct.).

In my paper on the types in the Paris Museum (*l.c.*) it was shown that the *Cryptoplax* from Sydney, that has been known by collectors as *C. striatus*, Lam., is not that species, but is conspecific with *C. torresianus* of Rochebrune. In the hurry of getting that paper completed in time for publication in last year's Transactions, I was unable to refer to my notes on the types one had examined in the British Museum. On turning them up I found that Reeve's name, *C. rostratus*, antedates that of Rochebrune by many years. The following is my note, dated June, 1922: "Reeve's type of *C. rostratus* looks like the Sydney *Cryptoplax*; probably the locality, Torres Strait, is incorrect."

The following is Reeve's description: "*Chitonellus rostratus*, Reeve. The beaked *Chitonellus*. The valves triangularly oblong, beaked posteriorly, smooth along the summit, grooved on either side, intermediate ridges somewhat grained, olive, dotted with light green, tegament thickly, short, villous-brown, dotted and banded with darker brown. Hab., Raines Island, Torres Strait, Cape Ince."

*In conclusion.*—Mr. Iredale and myself were evidently wrong in our surmise that Reeve's locality was incorrect, for Rochebrune's type of *C. torresianus* is certainly conspecific with the Sydney shell; this confirms the extension of the range of that species northwards to Torres Strait, and I have a specimen that seems to belong to this form from Twofold Bay, given to me by Mr. Iredale, so it is quite possible that *C. striatus* and this species may overlap on the Victorian border. This species is easily distinguished from *C. striatus* in that, although very similar in the very juvenile stage, *C. rostratus* carries this beaded, granulose character into the adult, which *C. striatus* does not; also the valves of *C. rostratus*, even in the fully adult shell, still touch one another. In *C. striatus* the valves, after the first 4, are more or less spaced in fully adult shells, the spicules in the northern species are slightly more slender, but this difference is but slight.

## CRYPTOPLAX MICHAELSENI, Thiele, 1911.

Pl. xvi., fig. 8; pl. xix., figs. 3, a, b, c.

(Fauna Sudwest Australiens, *Polyplacophora*, Thiele, 1911, p. 404, pl. vi., figs. 11-17.)

Another important find of Mr. Worsley C. Johnston's, at Carnarvon, is that of a remarkable little *Cryptoplax*, 7 mm. in length, this species having previously

only been known from a single and probably minute specimen, also obtained in Shark Bay; and described by Dr. Thiele (*l.c.*).

As I believe no previous description of this shell has appeared in any English publication, I give the following free translation from the German:—

“The colour of the shell is yellowish-brown with a few symmetrical dark spots, the posterior portion of each valve is rose-red, the sutural laminae are transparent, while the valves are fitted close together without any interspaces; shape of the median valves very little different from the others. Tegmentum is somewhat arched, broader than long (probably this is due to its being an extremely juvenile shell—Ashby), anteriorly fairly straight, posteriorly with a distinctly produced beak; the posterior valve is, similarly, a little broader than long, fairly flat, mucro overhangs the posterior margin; the anterior valve and lateral portion of others is distinctly sculptured with small warts. The ‘tegmenta’ is similar to *Acanthochites*. Anterior valve 3 slits, others none. The girdle banded brown, upper side clothed, not very closely, with larger and smaller, round-ended, longitudinally-grooved, lime spicules,  $140\ \mu \times 17\ \mu$ ,  $160\ \mu \times 13\ \mu$ , and  $60\ \mu$ , respectively, Shark Bay.” (The spicules are highly polished, the longitudinal grooving, more correctly scratching, can only be detected by use of a fairly high power. I am indebted to Dr. Tiegs for the use of his microscope in the matter of this determination.—Ashby.)

Dr. J. Thiele, in his Introduction, explains that he mistook the little animal for an *Acanthochiton* until he had disarticulated it; this will account for his giving no measurements.

I conclude, from the figures he gives of the valves, that his specimen was a very juvenile shell, much less than the 7 mm. specimen collected at Carnarvon. It is well to note that the valves of all very juvenile specimens of the members of this genus are proportionally much broader than is the case in the adult; in this respect the valves of the juveniles of most species have a great similarity.

*Differences.*—No doubt, for the reason stated above, Dr. Thiele gives no figure of the complete shell and ignores one of its most distinguishing characters, *viz.*, that the spicules on the girdle are adpressed, or lying close to the girdle, not erect, as is usual with other members of the genus *Cryptoplax*. I have been able to detect the three forms of spicules as figured by Thiele (*l.c.*), but the long, finger-like, slightly-flattened, round-ended ones (f. 15, *l.c.*) are by far the most numerous, and differ from all other known *Cryptoplax*.

The sculpture of the valves consists of rows of but slightly-raised, flat, or squamose pustules, very similar to those on *Acanthochiton bednalli*, and in this respect different from any other known species. I give a photograph of the whole shell and also of the valves.

#### CRYPTOPLAX HARTMEYERI, Thiele, 1911.

Pl. xix., fig. 1.

(Fauna Sudwest Australiens, *Polyplacophora*, Thiele, 1911, pp. 405, 406, pl. vi., figs. 18-25; Ashby, Trans. Roy. Soc. S. Austr., vol. xlv., p. 46, 1921; *l.c.*, vol. xlvi., pp. 577, 578, 1922.)

Dr. Thiele states that he had three specimens for examination, all from Western Australia, two without any further data, and the other from Surf Point, Shark Bay. He describes the general appearance of the large specimen, 40 mm. in length, as yellowish with dark brown, richly marbled, the valves dark blackish-brown anteriorly, becoming lighter towards the posterior margin. The four anterior valves touch one another, the four posterior are separated by spaces that are greater than the length of the valves themselves. The figures of both valves and spicules are from a smaller specimen, of which no measurements or description, before disarticulation, are given. I conclude the

disarticulated specimen must be considered the type. The following is an abstract of his description, which I believe has not heretofore been published in English:—

“Anterior valve, partly eroded, confusedly granulose; valve 2, fairly narrow dorsal area, granules in lateral portion gradually merging into longitudinal ridges; in valve 3 he refers to distinct longitudinal folds in the lateral parts; valves 5 and 6 are the smallest, and the seventh distinctly larger. The posterior valve is a little pointed anteriorly and rounded posteriorly; the mucro is a little in front of the posterior margin; the smooth dorsal area is narrow, and the folds of the remaining part radial from the apex.”

Notes on the specimen collected by the writer at Yallingup, Western Australia, in October, 1920:—

The specimen is 12 mm. in length, about one-quarter that of Thiele's larger shell, and therefore a little over one-sixteenth of the bulk of that specimen. In the Yallingup shell all the valves are touching, but this is to be expected; the valves of most species that are spaced in the adult are at this stage imbricating. Thiele's description, taken with the figures, well fits my specimen; but to this I would add that the granules in the anterior valve are in somewhat confused, intercalated rows, the grains are elongated like tear-drops, and placed diagonally in the rows. The sculpture of the other valves consists of longitudinal rows of semitransparent, white granules, commencing small near the dorsal area but increasing in size and elongation anteriorly and laterally. In no case can the outer row be said to coalesce into a rib, as stated by Thiele, but not shown in his figures; still the outermost granules are so crowded that one may conclude that, in older shells, this feature will come into being. The grains, although much raised, are not as rounded and bead-like as in the *Cryptoplax* from Sydney. The most distinctive character of the shell is the arrangement and shape of the spicules. Thiele's figs. 23 and 24 (*l.c.*) well depict 95 per cent. of the spicules, the striae are as drawn and easily seen. Most of the spicules of the Yallingup specimen are shaped like his longer figure, but in stoutness half-way between his two figs. 23 and 24. I cannot notice the slight lateral compression noted by Thiele. The spicules (his fig. 26) are only met with in the bunches at the sutures. It should be noted that his fig. 24 is drawn upside down. In the Yallingup specimen the spicules are white and widely spaced, a feature that is not mentioned by Thiele, but is certainly a striking and distinctive character. The ground colour of my shell is horn colour, and no mottling can be seen on the girdle, but this character is quite unimportant, and may have existed only on Thiele's large specimen.

*In conclusion.*—The widely-spaced, short, stout, slightly-curved, and bluntly-pointed spicules separate this species at once from any of the forms with which we are familiar in Eastern Australia.

#### CRYPTOPLAX OCULATUS, Quoy and Gaimard, 1834.

(*Chiton oculatus*, Q. and G., Voy. Astrol., Zool., iii., p. 410, pl. 72 or 73, figs. 37, 38, 1834; *Chitonellus fasciatus*, Q. and G. of Reeve; *C. montanoi*, Rochebrune; Ashby, Trans. Roy. Soc. S. Austr., vol. xlvii., 1922.)

While this species is very close to *C. larvaeformis*, Burrows, reference to my paper (*l.c.*) will show that in this latter species only the two first valves are circular, whereas my specimen of *C. oculatus*, from Island Sula, has the three first valves broad and circular. On comparison with specimens of the former from Tonga (given me by Major Dupuis) I note that the spicules of the Sula shell are longer and quite distinct, also, as noticed by Dr. Pilsbry, the three anterior valves of *C. oculatus* are surrounded by a broad margin of longish, black spicules, with another outer ring of white; this feature is quite absent from the Tonga shells.

I therefore consider that we are justified in retaining *C. oculatus*, Q. and G., as a good species.

*Description*.—The sculpture of this species is composed entirely of longitudinal ridges, the first three valves are circular, broad, and imbricating; all the rest, in adult shells, are narrow and more or less spaced.

*Girdle*.—The girdle is handsomely banded and the spicules are dense, short, stout, and have rounded apices; in this respect it is the only species that seems to approach the spiculate character of Lamarck's *C. laevis*.

I have two juvenile specimens given to me as from Torres Strait, by Major Dupuis, that quite possibly belong to this species, but determination is difficult, as all the spicules have been lost. These are the only specimens I have seen that are strictly Australian in origin. While we were unable to locate Quoy and Gaimard's type in the Paris Museum, it is just possible that the shell described by Rochebrune, under the name *C. montanoi*, may have been their actual type, for he was not adverse to doing such, for, as I have before shown, Rochebrune certainly gave a new name to Blainville's type of *Chiton longicymba*.

#### CRYPTOPLAX BURROWI, Smith, 1884.

(*Chitonellus burrowi*, Smith, Zool. Coll. H.M.S. Alert, p. 85, 1884; *Chitonellus larvaeformis*, Blainville of Reeve, Conch. Icon., f. 3, 1847; *Cryptoplox burrowi*, Haddon, Chal. Polyplac., p. 42, pl. 3, f. 11 a-m; Pilsbry, Man. Con., vol. 15, p. 54, 1892.)

Quoting from Pilsbry: "This curious species is known by the small size of the valves, the remoteness from one another of the fourth, fifth, and sixth, and the excessively short and densely packed spines on the mantle." Reeve's figure is excellent, but his habitat of Port Adelaide is, of course, a myth; but the specimen recorded as having been taken at Port Molle, in Queensland, is probably authentic. I did not see this species in the collections in the British Museum, but we may have overlooked it.

#### SUMMARY LIST OF AUSTRALIAN CRYPTOPLAX.

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|-------|--|---------------------------------------|
| I.    | <i>Cryptoplox striatus</i> , Lamarck.          | South Australia and Victoria.         |
| Ia.   | " <i>striatus</i> , var. <i>gunni</i> ,        | Reeve. Tasmania.                      |
| Ib.   | " <i>striatus</i> , var. <i>westernensis</i> , | Ashby. Western Australia.             |
| II.   | " <i>laevis</i> , Lamarck.                     | Locality and identification doubtful. |
| III.  | " <i>iredalei</i> , Ashby.                     | South Australia and Tasmania.         |
| IV.   | " <i>rostratus</i> , Reeve.                    | New South Wales and Queensland.       |
| V.    | " <i>oculatus</i> ,                            | Quoy and Gaimard. Queensland.         |
| VI.   | " <i>burrowi</i> ,                             | Smith. Queensland.                    |
| VII.  | " <i>hartmeyeri</i> ,                          | Thiele. Western Australia.            |
| VIII. | " <i>michaelseni</i> ,                         | Thiele. Western Australia.            |

A total of eight species and two varieties.

#### DESCRIPTION OF PLATES XVI. TO XIX.

All reproductions from photographs by E. Ashby.

#### PLATE XVI.

- Fig. 1. *Lepidopleurus liratus*, Ad. and Ang. From South Australia.  
 " 2. " *profundus*, Ashby. Type. From South Australia.  
 " 2a. " *profundus*. From South Australia. Median valve, edge on.  
 " 3. " *columnarius*, Hed. and May. From Tasmania.  
 " 3a. " *columnarius*. Median valve, edge on, marked co-type.

